

# Economic Impact Analysis for Freeport Ship Care Facility



**Lloyd  
Werft** //

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## *Executive Summary*

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This project will be the largest non-government, non-tourist employer within the entire country and could be the "economic engine" that establishes Grand Bahama Island as the cruise ship repair capital of the Western Hemisphere and as a major job generator for the Bahamas.

### *The Ship Care Facility (SCF) Will:*

#### *Create*

Approximately 2,000 total jobs throughout the economy by 2004

Additional sustainable demand for hotel rooms, condominiums/rental units, and permanent housing

Development in all sectors with emphasis in hotels and restaurants, transportation, storage and communications, trade and public administration and education

#### *Increase*

Gross Domestic Product

Sales and revenues of Bahamian firms

Taxes and revenues to the Government

#### *Serve as a catalyst for:*

Development of a training facility to increase skills of Bahamian workers

Direct marketing campaign to attract additional companies to locate on Grand Bahama Island

Island-wide planning and preparation to support future growth

## *Executive Summary*

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By establishing the SCF on Grand Bahama Island, the people of Grand Bahama Island and The Commonwealth of the Bahamas have an opportunity to shape their economic future.

An impact analysis has been performed to identify the employment and income effects that the SCF is going to have on the Bahamian economy. Modeling experts from the Center for Development Analysis, the State University of New York at Buffalo, and the Institute for Community and Area Development at the University of Georgia constructed an approximate Input-Output (I-O) model to capture the employment and income multipliers generated from the proposed SCF.

Including conversations with persons on Grand Bahama Island, data was compiled from the Bahamas Department of Statistics and the Lloyd Werft Business Plan. Baseline information from Price Waterhouse Coopers was also utilized and the modeling experts were able to develop an approximate I-O table which was used to capture the significant impacts generated from the SCF. Additional sources were used and may be found in Appendix D.

The modelers used this data to develop an Input-Output table that captures the significant impacts generated from the SCF. The model produced an employment multiplier of approximately 4.5. *This means that for every 1 job created at the facility, there will be approximately 4 new jobs created in the Commonwealth.*

Although the multiplier may appear large, high wages to employees, cruise ship crew's spending, contract worker's spending, and follow-on suppliers/vendor's spending are accounted for and support the large multiplier. Given Grand Bahama Island's small population, these spending streams have a significant effect on the economy.

The model also produced an income multiplier of 1.62. *This means that approximately \$B.62 will be captured locally in new income for Bahamians for every \$B1 that is generated in new sales by the project.*

This report indicates, from an employment and financial perspective, that the SCF is a healthy project for Grand Bahama Island and the country as a whole. It is important that the project proceeds to ensure the continued success of the Grand Bahama economy.

### *Potential Benefits*



*The SCF will be the largest non-tourist and non-government employer in the Bahamas.*

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*For every 1 job at the SCF, an additional 4 jobs will be created.*

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*The labor force on Grand Bahama Island will increase by approximately 8 percent by 2004.*

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*Approximately 2,000 total jobs will be created by 2004 with over 80% of these going to Bahamians.*

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*Over 470 people will be employed directly at the facility by 2004.*

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*Bahamian employees at the SCF grow from approximately 33 workers in the facility to almost 388 by 2004 or 82.5% of the workforce.*

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*For every \$1 dollar in sales from the facility, an additional \$.62 in income will benefit the Bahamian economy.*

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*Ships crew expenditures will grow from \$B2.8 million to \$B4.2 million in 2004.*

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*Fees/taxes paid to the Bahamian government climb from an estimated \$B3.5 million in 1999 to \$B7.6 million in 2004.*

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*Additional revenue from airport departure taxes may potentially increase to over \$B144,000 by 2004 from ship crew departures alone.*

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### *Action Steps to Maximize the Multipliers*

For Grand Bahama Island to maximize the various opportunities, a number of "action steps" must be taken. Failure to act or take these necessary steps will significantly reduce the likelihood of attaining the multipliers forecast in the economic input analysis. These areas are as follows:

*Execute* both legal and financial points in the "Lloyd Werft Grand Bahama Limited Heads of Agreement."

*Undertake* those activities in the Lloyd Werft Business Plan.

*Educate* Lloyd Werft and follow-on subcontractors / vendors about local existing Bahamian businesses.

*Provide* the necessary support services (communications, banking, postal, and medical) to ensure that ships' crews spend their money on GBI and that those dollars stay on the island and create more jobs. Make it attractive and easy for them to do this.

*Establish* a permanent training facility to ensure that Bahamians are ready to fill these upcoming job opportunities.

*Design* and implement a master plan to insure the island's infrastructure (medical clinics, the hospital, police stations, telecommunications, public transportation, roads, schools, libraries, and fire stations) is ready to accommodate the growth associated with the SCF, follow-on subcontractors / vendors, and ship's crews.

*Develop* an effective transportation program (buses / motor coaches).

*Expedite* proposed airport renovations and improvements to accommodate the anticipated increase in air passenger traffic.

*Maintain* an active campaign to increase airlift capacity to GBI.

*Initiate* a well organized and professional recruitment campaign aimed at those subcontractors / vendors who have historically worked for Lloyd Werft to ensure that they "follow" Lloyd Werft to GBI, locate on GBI, and hire local Bahamians.



## *Executive Summary*

### *Job and Training Opportunities*

#### **Hotel**

Carpentry  
Carpetry  
Tiling  
Light and Sound  
Stainless Steel Sheet Metal  
Upholstery  
Fabric - Supplier  
Marble/Granite - Treatment Supply  
Panel Supplier

#### **Catering**

Electromechanical  
Plumbing  
Metal Carpentry  
Ventilation Duct - Cleaning  
CO2 Recharging and Service Stations  
Fire Extinguisher Recharging and Service Stations

#### **Deck**

Kamewa and Brunvoll Propeller Reps  
Deck Machinery Fitters  
Navigation Equipment Electronics  
Liferaft Service Station

#### **Painter**

Roller Painting (large area)  
Gritblaster  
Spray Painting

#### **Engine**

Welders  
Ship Fitters  
Pipe Fitters, including Thermoplastic Fitters  
Diesel Mechanics  
Electrician  
Millrights  
Riggers  
Sheet Metal  
A/C Coils Fitters  
Air Balancing Technician  
Stabilizers  
Compressors A/C and Air Fitters  
Ceramic and Polymer Coating Applicators  
Rudder  
Elevators  
Winches  
Azipods  
Waste Processing Plants  
Boilers  
Fuel and Oil Separator Specialist

#### **Auxiliary Equipment**

High Load Fork Lifts Rental Station  
Cherry Picker Rental Station  
Compressor/Generator Rental Station  
Crane Rental Station  
Dumpsters - Per Ship  
Chemical Marine Supplier  
Valve/Fitting/Nuts & Bolts/Welding  
Equipment Supplier  
Chemist - Gas Free Services and Certification

## Economic Impacts

### Summary

#### Projections of the Model



The total employment multiplier for the SCF by 2004 is approximately 4.5. This means that for every 1 job created at the facility, there will be approximately 4 additional jobs created in the Commonwealth. By 2004, approximately 2,000 jobs will be created throughout the Commonwealth with over 1,600 of these jobs going to Bahamians.

Table 3 - Projection of Total Number of Jobs Based on the Model

*Jobs Created by the SCF plus Employees and Crews Local Spending*

Item	1999	2000	2001	2002	2003	2004
Direct Jobs at Facility	65	249	201	326	358	470
Induced Jobs (from Employee Consumption)	39	290	342	458	555	660
Indirect Jobs (from Facility Purchases)	277	440	367	463	536	633
Induced Jobs (Crew In port, Infrastructure)	-	129	143	182	169	194
<b>Total Jobs</b>	<b>381</b>	<b>1,108</b>	<b>1,053</b>	<b>1,429</b>	<b>1,618</b>	<b>1,957</b>
<b>Multiplier (Total/Facility)</b>	<b>5.9</b>	<b>4.4</b>	<b>5.2</b>	<b>4.4</b>	<b>4.5</b>	<b>4.2</b>

Note: Direct Job Figures for years 2000, 2001, 2002, 2003, and 2004 are annualized job figures, not necessarily those directly from the Lloyd Werf draft. The job figure from 1999 is only for part of the year.

Note: For presentation purposes, multipliers have been rounded

#### Projection of Total Number of Bahamian Jobs Based on the Model

*Bahamian Jobs Created by the SCF plus Employees and Crews Local Spending*

Item	1999	2000	2001	2002	2003	2004
Direct Jobs at Facility	33	140	190	224	271	388
Induced Jobs (from Employee Consumption)	32	237	279	375	453	539
Indirect Jobs (from Facility Purchases)	236	346	275	377	437	517
Induced Jobs (Crew In port, Infrastructure)	-	140	117	148	138	158
<b>Total Bahamian Jobs</b>	<b>301</b>	<b>863</b>	<b>861</b>	<b>1,124</b>	<b>1,299</b>	<b>1,602</b>

Note: Bahamian employment share is pro-rata as population

Table 3 shows the projected total number of jobs created as a result of the SCF. It assumes:

- Minimal "leakages" to Miami and other islands
- Support businesses are currently in place to handle the facility
- 20-30 vendor/subcontractor businesses associated with the SCF will locate in the Bahamas
- Prepared industrial, commercial, and residential sites with all utilities are in place for vendors and subcontractors to locate
- An average of 20 Bahamians are employed per vendor/subcontractor
- Adequate infrastructure is in place including roads, utilities, medical services etc.



## Projections Based on a Graduated Growth Approach



The projected number of jobs for Bahamians is:

Year	1999	2000	2001	2002	2003	2004
Number of Jobs	301	173	344	675	1,039	1,602

This model assumes the island grows concurrent with the project. The model represents an ideal situation of the potential for Grand Bahama Island if public sector, private sector, general citizenry, and academia pull together to maximize the opportunity.

**Table 3b - Projection of Total Number of Jobs Based on a Graduated Growth Approach**

*Jobs Created by the SCF plus Employees and Crews Local Spending*

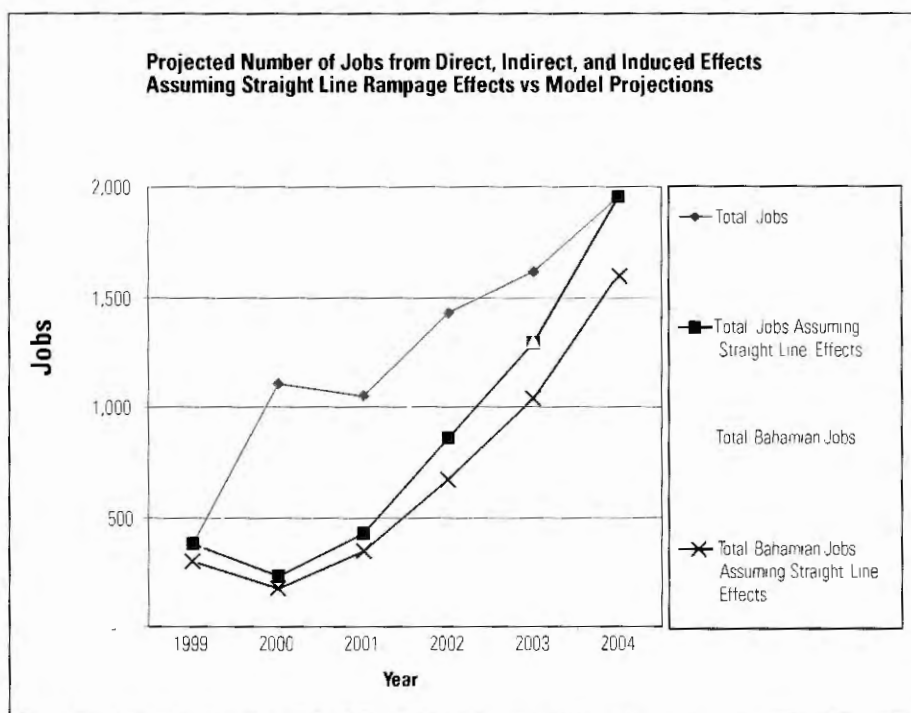
Item	1999	2000	2001	2002	2003	2004
Percentage Used for Straight Line Effects	100%	20%	40%	60%	80%	100%
Total Jobs	381	1,108	1,053	1,429	1,618	1,957
<b>Total Jobs Assuming Straight Line Effects</b>	<b>381</b>	<b>222</b>	<b>421</b>	<b>857</b>	<b>1,294</b>	<b>1,957</b>
Total Bahamian Jobs	301	863	861	1,124	1,299	1,602
<b>Total Bahamian Jobs Assuming Straight Line Effects</b>	<b>301</b>	<b>173</b>	<b>344</b>	<b>675</b>	<b>1,039</b>	<b>1,602</b>

Table 3b shows the projected total number of jobs created as a result of the SCF based on a graduated straight line effect in comparison to the model's projections. Several assumptions were made when constructing this table. They are:

- Not all 20-30 vendor/subcontractor businesses associated with the SCF will locate in the Bahamas
- Leakage to Miami and other locations will occur
- Adequate infrastructure is not in place on the island or in the Grand Bahama Sea/Air Business Centre
- Support businesses are not in place
- Prepared industrial, commercial, and residential sites with utilities in place for vendors and subcontractors to locate are not available

After the initial construction phase towards the end of 2000, there will be a decrease in the number of jobs. However, as the SCF moves into full operation, the number of jobs increases.

Figure 2 - Comparison of the Model's Projections vs. the Graduated Growth Approach



Although the model is based on the Commonwealth as a whole, practically all of the effects will be felt on Grand Bahama Island since:

- Economies of the islands tend to operate independently of one another
- Significant trade or commerce between the islands is minimal
- Activities on Grand Bahama Island tend to stay on Grand Bahama Island

Due to this, it is safe to say that potentially 90 percent of the economic impacts generated by the Ship Care Facility will be seen on Grand Bahama Island. By 2004, the total labor force on GBI will be approximately 22,714, which is an increase of approximately 8 percent.

Note: Economic impact studies often underestimate the impacts of a project of this type on a local economy by viewing it relative to a very short time frame, thereby missing the true magnitude of its total effects. The impacts of this SCF on Grand Bahama Island are similar to throwing a large rock in a small puddle of water as opposed to tossing the same rock in a large lake. The larger the project relative to the size of the community, the greater the impacts will be from the project.

Grand Bahama Island has the opportunity to establish itself as the world's premiere ship care facility. It should capitalize on this opportunity and maximize its potential to attract ancillary businesses. State-of-the-art infrastructure and best practices in economic development initiatives are warranted to achieve this.

The Government, Grand Bahama Port Authority, community leaders, and the private sector need to work together to ensure that the island is ready and able to accommodate the demands of the SCF.

## Income Multiplier

The income multiplier computed for this analysis measures the change in total local income that will be generated, primarily across Grand Bahamas Island, per dollar of new income earned (Facility Revenues) by the SCF. This information is presented in Figure 4 and Table 5.

Figure 4

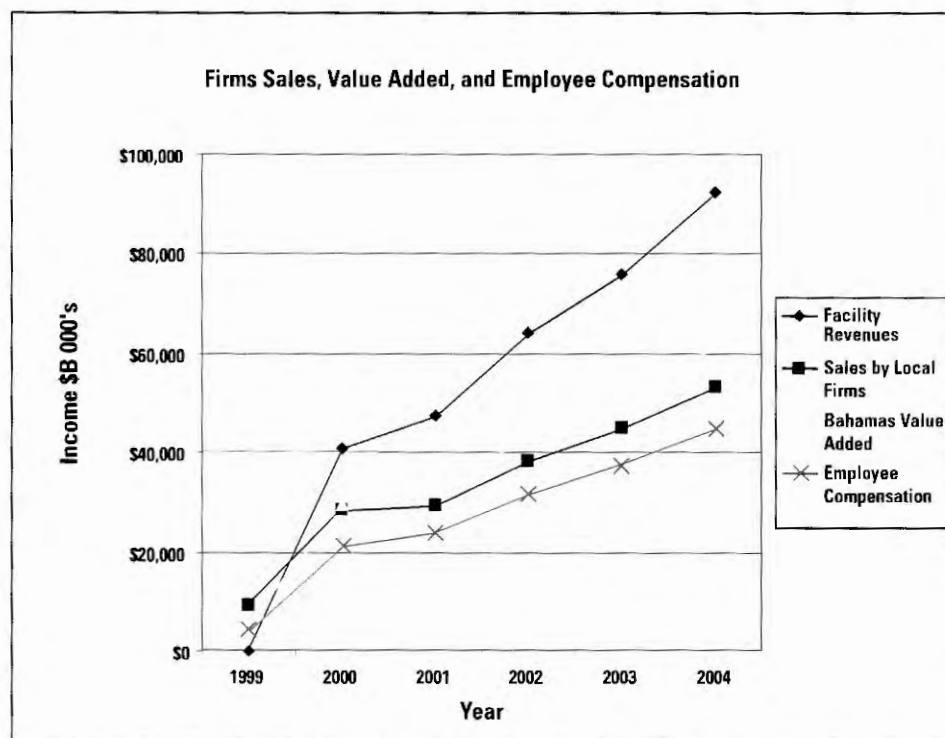


Table 5

*Income Created by the SCF plus Employees and Crews Local Spending*

Item	1999	2000	2001	2002	2003	2004
Facility Revenues	0	40,760	47,388	64,196	75,926	92,426
Sales by Local Firms	9,400	28,418	29,526	38,316	45,052	53,403
Crew Expenditures		2,757	3,065	3,887	3,626	4,150
Total=Facility + Island Sales	9,400	71,935	79,979	106,399	124,604	149,979
Sales Multiplier (Total/Direct Facility Revenues)		1.76	1.69	1.66	1.64	1.62

Note: Multipliers in the table have been rounded

\* Bahamas Value Added

\* Employee Compensation

\* These represent other types of income indicators. Do not add these into the income multiplier calculation.

Table 5 presents information based on revenues forecasted by the SCF in their Prospectus. Essentially, when the project reaches 2004, the income multiplier for the SCF will be 1.62. The interpretation of this income multiplier implies that by 2004, approximately \$B.62 cents will be captured locally in new income for every \$B1 dollar that is generated in new sales by the project.

### *Permanent Training Center*

Significant to the SCF will be the establishment of a permanent training facility that will be used to train Bahamian workers in trades such as:

- Electrical Systems
- Machine Shop
- Navigation Equipment
- Electronics
- Metal Working
- Pipe Fitting
- Engine Repair
- Boiler Repair
- Welding

Note: See Executive Summary for the complete potential job and training opportunities listing

During construction of the new SCF in Freeport, initial training of facility workers will take place at Lloyd Werft's yard in Bremerhaven, Germany. Upon commissioning the SCF and the surrounding infrastructure, permanent training courses will be established at a training center on Grand Bahama Island. Further, approximately 25 apprenticeship positions will be created in mid 2000 growing to 40 positions in mid 2001 at the repair facility.

The initial training facility in the Bahamas will be conducted aboard an older cruise ship or a floating hotel. This training center will be used to not only train Bahamian ship repair workers, but also the crews of dry docked cruise ships or other vessels. At some point in the future, a permanent training facility may be built ashore to be used to train Bahamians. If this facility approaches 20,000 to 30,000 sq. ft. in size, this would result in additional capital expenditures of some \$2,000,000 to \$3,000,000 for the building and depending on the training equipment another \$100,000 to \$300,000. The construction of the facility would result in an additional 15 to 25 Bahamian construction jobs.

#### *Impacts Based on the Size of the Facility*

Size of Facility	Capital Expenditures	Add'l costs	Number of Jobs
20,000 sq. ft.	\$2,000,000	\$100,000	15
30,000 sq. ft.	\$3,000,000	\$300,000	25

### *Logistics Center*

There is the potential for the establishment of a Logistics Center or Warehouse adjacent to the ship repair facility. The center would serve as the major storage facility for the cruise vessel's equipment and spare parts. Since Grand Bahama Island will become the major ship repair center for the region, there is potential that the cruise ships operating in the area will establish Grand Bahama Island as a logistics and supply center.

Note: A single building of 50,000 sq. ft. to 100,000 sq. ft. would result in additional capital expenditures of between \$2,370,000 to \$4,750,000 and create 15 to 25 Bahamian construction jobs over a 7 to 12 month period.

### *Ship Crew Services*

With the arrival of 800 to 1,000 crewmembers from the major cruise ships, there will be significant need/opportunity for the following services:

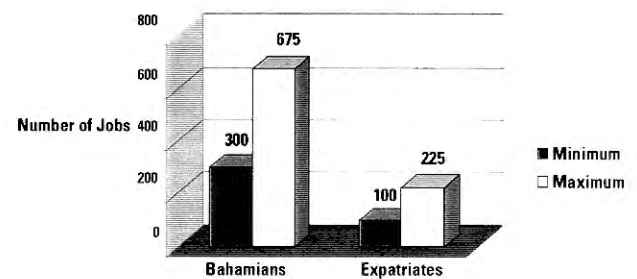
- Communications Services- to provide all necessary telephones, faxes and computer services to allow ships crews to communicate back to family members worldwide.
- Banking Services - to provide access to exchange and transfer of monies worldwide. Possibly even safe deposit boxes.
- Mail and Postage Services - to allow crew members to post packages, envelopes and personal belongings worldwide.
- Medical Services - to treat cruise-line staff and crew. Ship owners are now treating their staff in a variety of ports. A well-managed facility would be extremely beneficial and create additional Bahamian jobs in construction and in staffing.

### *Subcontractor and Vendor Companies/Relationships*

An estimate of 20 to 30 subcontractor and vendor companies could follow Lloyd Werft to Grand Bahama Island.

Employment by these U.S. and European suppliers could reach 20 to 30 employees per company. It is not clear what percentage would be expatriates to Bahamian workers, but on a ratio of 1 expatriate to 3 Bahamians, this could create between 300 to 675 Bahamian jobs. The secondary impacts are also significant. If the larger number is established, it will exceed the direct Bahamian employment of the ship repair facility.

**Indirect Employment Impacts Over the Duration of the Facility (Subcontractors and Vendor Companies)**



Also important is the effect this demand for new facilities will have on the proposed Grand Bahama Sea/Air Business Centre. Over time, this could generate the need for 200,000 sft. (low end) to 600,000 sft. (high end) of new space. Construction expenditures could range between \$12,000,000 to a high of \$36,000,000.

#### *Projected Construction Expenditure (Best Case)*

No. of Projects	Size	Total sft	Cost Per sft	Total Construction Value
20	x 20,000	= 400,000	x \$60	= \$24,000,000
30	x 20,000	= 600,000	x \$60	= \$36,000,000
20	x 10,000	= 200,000	x \$60	= \$12,000,000
30	x 10,000	= 300,000	x \$60	= \$18,000,000

Note: Over time, this proposed construction could create between 300 - 450 Bahamian construction jobs.

An additional by-product of this will be an increase in airborne freight shipments to the island as well as direct shipment of containers (as opposed to transshipment) to Grand Bahama Island. This will benefit the airport and container ports respectively.

#### *Impact on Existing Industries in the Bahamas*

The ship repair and conversion facility will have an impact on the existing utility companies on Grand Bahama Island as well as create new opportunities.

Both Freeport Power and the Grand Bahama Utility Co. (water company) will see an increased demand.

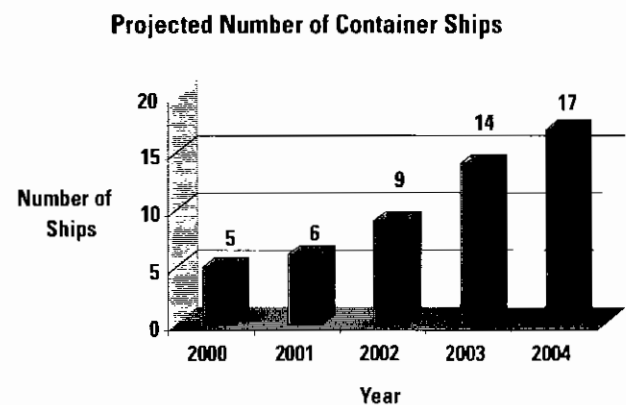
The current waste management company (or companies) will be required to provide extensive services to the shipyard to handle all needs of waste management. This may require new investment in equipment, technologies and training of new personnel to handle these demanding needs. This may require specific investment for the disposal of oil and other residues. Such an occurrence also creates additional job opportunities for Bahamians.

Since the ship repair facility will endeavor to operate under the most stringent of environmental laws and the government will appoint "an independent consultant" to monitor the operational compliance of the ship repair facility, additional opportunities will exist for Bahamian inspectors.

#### *Freeport Container Port*

The Container Port should benefit from an increase in direct container shipments of supplies and materials from the U.S. and Europe to the ship repair facility.

The Freeport Container Port has achieved significant success since its opening in 1997. It will also benefit from the proposed SCF. While repair of cruise vessels represents (2000-2004) an average of 43.4% of the facilities business over a 5-year period, repair to container ships also grows from 5 in 2000 to 17 in 2004. This accounts for some 15.5% of the facility's business in the last year. This repair capability will add significantly to the reputation of the port and its strategic location.





### *The Airport*

The Grand Bahama Airport will note an increase in passenger traffic once the ship repair facility gets underway. The increased passenger traffic will come from the crews rotating off and on of the cruise ships while in dry dock, and from the "swell" of contract workers to fulfill those major "short-term" turnaround jobs. Increased traffic will also result from ships' executive personnel, subcontractor and vendor personnel, and inspection personnel visiting the island because of business with the ship repair facility.

Existing airlift cannot support this estimated spike in passenger traffic, especially on crew "turnaround days." There will be a need for a corresponding increase in airlift to the island in the form of charter or regular scheduled service. This will result in increased landing fees, fuel consumption, baggage handling, rental car and taxi fees as well as the need to expand the airport. Current waiting rooms and customs cannot accommodate a spike in 200 to 300 people arriving or leaving at one time in addition to the existing arrivals and departures.

The potential exists for a cruise ship to begin a passenger voyage or end a passenger voyage at Grand Bahama Island after ending or starting a dry dock. In this scenario, the dynamics change rapidly. The increased need for additional airlift capacity and ancillary services would grow exponentially. The turnover in excess of 2,000 cruise passengers flying into or out of Grand Bahama in a single day could call for a drastic increase in the number of flights (14 MD - 80 sized aircraft), the number of taxi fares (a quadrupling of the current number of taxi fares), and other hotel projects similar to The Lucayan. The spin off from this development could be meaningful.

### *Hotel*

Hotels will experience an increase in bookings from the business activity associated with the SCF. The existing rooms, as well as the new 1,350 rooms coming on line at The Lucayan, will benefit from the crews that spend the night ashore, visiting business executives, and other groups visiting or associated with the ship repair facility.

The potential for a cruise ship to depart or end a cruise from Grand Bahama Island could change the demand for hotel rooms abruptly. The need to airlift and lodge the 2,000 passengers of a modern day cruise ship is staggering. This would require the immediate construction of additional hotel rooms on the island.

### *Housing Demands*

The need for housing will increase steadily with the ship repair facility becoming fully operational in the year 2000. The growth of the SCF through time will correspondingly generate a need for executive housing, affordable middle income housing, rental apartments, condominiums and affordable, low-cost housing. The SCF's need for competent workers may bring about the migration of Bahamians back from the U.S., UK

and Canada, as well as out- island migration to Grand Bahama Island. In addition, the real estate market will experience a firming in pricing/inflation as initial demand exceeds supply. This will create additional jobs for Bahamian construction workers as well as opportunities for Bahamian material suppliers/vendors to the housing market.

#### *Cruise Line Industry Training Center*

There is the potential that the initial training facility associated with the ship repair and conversion facility will be expanded to accommodate the ongoing needs of cruise ships and other types of vessels to continuously train new employees as well as re-certify existing employees. Grand Bahama Island has the potential to establish itself as a major training center for the Caribbean/South Florida region. A positive ripple effect on airlift, hotels, real estate and retail will occur should this happen.

## *Action Steps to Maximize the Multipliers*

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The proposed Lloyd Werft Ship Care Facility planned for Grand Bahama Island represents a "pivotal" opportunity in the economic history of the island. Earlier, this report addressed the impact the facility could have on the Bahamian economy.

All of the events mentioned can be economically significant. However, all of this becomes an academic exercise unless action is taken. The economic landscape is "littered" with plans that did not come to fruition for one reason or another. To avoid this, it is contingent upon GBI to plan and to carry out the necessary steps to maximize the various multipliers. These steps include:

1. *"Heads of Agreement"* - Those points in the "Lloyd Werft Grand Bahama Limited Heads of Agreement," both legal and financial, need to be executed.
2. *Lloyd Werft Business Plan* - Those activities in the Lloyd Werft Business Plan entitled "Ship Repair and Conversion Facility" (dated February 24, 1999) need to be undertaken:
  - The order placed for the new 70,000-ton floating dry dock.
  - The design completed and a contractor or contractors chosen for the construction of the ship repair/conversion facility including all piers, quays, infrastructure and shop floor/office facilities. This construction needs to get started if the yard is to be fully operational in 2000.
  - All equipment for the shop needs to be placed on order, and those items with long lead times identified and expedited. All cranes and supporting equipment placed on order.
  - Contact all relevant utilities on Grand Bahama Island now and include them in the development plans so that they can be ready in 2000.
  - The floating hotel or old cruise ship which is to be used for training needs to be purchased so that those Bahamians being trained in Bremerhaven can continue their training on Grand Bahama Island. The hotel or ship is also to be used to provide housing for the non-local staff of Lloyd Werft.
3. *Planning & Marketing* - Joint planning and marketing needs to be conducted now to maximize opportunities.
  - A well-organized and professional recruitment campaign should be aimed at those subcontractors/vendors who have a historical working/contractual relationship with Lloyd Werft. The objective of the campaign is to determine those companies best suited to "physically locate" on GBI and to determine the steps and resources necessary to attract them here. Answers to questions concerning physical facility needs, job training needs, financing, telecommunications, and timing of their project are all key. A program to position and train Bahamians for these job opportunities is vital to meeting the projected multipliers.
  - It has been estimated that anywhere from 20 to 30 existing subcontractor and vendor companies currently doing work for Lloyd Werft might follow them to GBI. The Grand

Bahama Port Authority should ascertain their space needs and take active steps to locate them in the Grand Bahama Sea / Air Business Centre. To be proactive, serious consideration should be given to the construction of a speculative industrial building that could easily be divided in to 5, 10, or 20,000 sft. sections for individual tenants. To have space “ready to show”, will help attract those supplier/vendor companies that are so important to maximizing the multipliers found in this study. Attractive packages need to be offered.

- An active program should be undertaken by Lloyd Werft and the Grand Bahama Port Authority to call on major cruise lines to determine their logistics needs. Plans should be developed to construct a logistics warehouse with such features that would attract their equipment and spare parts business. If this logistics warehouse is to be located in the Grand Bahama Sea / Air Business Centre, plans need to be established with paved roadways, fire protection, water and sewer in place. If GBI is truly to become a major ship repair center for the region, this needs to be done.
- A program to benefit existing Bahamian businesses on GBI needs to be established. It will educate Lloyd Werft and its follow-on subcontractors/vendors as to those businesses already on the island and information about the company and its capabilities.
- A specific marketing program focused on visiting ships crew members and temporary workers needs to be undertaken to educate them on the many services (banking, medical, telecommunication and mail) that will exist on the island as well as the many existing leisurely activities.

Note: These are recreational and leisure activities and facilities currently available on GBI.

Arts & Crafts Market	Grand Bahama Sporting Complex	Shopping
Baseball & Softball	Horseback Riding	Soccer
Basketball	Kayaking	Sports Fishing
Cinemas	Library	Squash
Cricket	Markers	Swimming
Diving	National Parks	Tennis
Garden of The Groves	Night Life	Theatre
Glass Bottom Boats	Rand Nature Center	Water Sports Activities
Golf - 7 Courses	Rugby	YMCA
Grand Bahama Museum	Sailing And Boating	

- While it is our understanding that there is currently an active campaign under way to increase “airlift” capacity to GBI, a comprehensive campaign should be directed at all major carriers (including airfreight carriers) to update them about the potential that this development represents in terms of increased demand.
- An active “marketing” program directed among local Bahamians as well as to off-shore condominium/apartment developers should be undertaken to increase

awareness of the "housing" impacts of the proposed Ship Care Facility and the opportunities available. This same thrust should be aimed at local Bahamian homebuilders. The goal of such a program would be to increase the offerings available to potential renters/purchasers. A by-product of the SCF will be a stabilizing effect in housing pricing and inflation. As we move through the business plan time spectrum, eventually supply and demand catch-up and the inflation should dissipate.

4. *Infrastructure* - Based upon the projected employment levels of the Ship Care Facility and its projected volume of business (all vessels), GBI's community and existing infrastructure will be significantly impacted beginning in the year 2000. Looking at just ships' crewmembers and temporary contract workers, these "visitors" swell to over 24,880 people in 2000. This temporary population grows each succeeding year to over 37,380 people by 2004. While this dramatic influx of visitors will certainly benefit existing restaurants, retail establishments, commercial and recreational business, it will certainly strain the island's existing infrastructure. Careful thought and planning needs to be given to the impact this will have on medical clinics, the hospital, police stations, telecommunications and public transportation.

Note: A coordinated effort by all interested "stakeholders" - local government, private industry, and local businesses needs to be undertaken to plan for these developments and make sure that Grand Bahama Island is ready.

With the corresponding growth in the total employment of the Ship Care Facility to 470 employees by 2004, this will create the demand for additional automobiles on the island as well as new housing. Will the existing road and highway system be able to support such growth? Will new schools, libraries and fire stations need to be built to support this growth? These are questions that need to be asked now and addressed.

- Specific support services on the island need to be ready to serve both temporary contract workers and visiting ships crews while in dry dock. These services (communication, banking, postal and medical) are all key in serving worker's and crew's needs. These services not only provide jobs for Bahamians, but capture those worker/crew dollars which could be spent elsewhere if these services were not available. The attractiveness and ease of access to these services will have a major impact on their use.

A comprehensive plan by the Grand Bahama Port Authority needs to be drawn up for these services as to ensure their proper placement and ease of use, to ensure proper standards and to ensure viable economic entities are providing these services.

- The dry docking of some 27 cruise ships forecast for the year 2000 (subsequently growing to 40 by the year 2004) and their attendant crews and contract workers will put an increasing demand on airlift capacity to the island. Increased traffic will also result from the ship's executive, subcontract, vendor and inspection personnel visiting the island because of the new facility. This comes on top of an expected

increase in visitors from the staggered opening of The Lucayan (complete in the Summer of 2000) and the possibility of another 280 room hotel opening in late 2000 to mid 2001.

Given its current configuration, the physical size of the airport terminal needs to be increased. The anticipated spike in crews and temporary workers on cruise ship "turnaround" days, as well as the existing normal volume of airline passengers will overwhelm present accommodations and cause delays. This will particularly impact waiting room areas, baggage handling, customs and ground equipment. It is our understanding that plans have been developed to either expand or build a completely new facility. These plans need to be accelerated now.

Efforts to resurface the runways at Freeport International Airport should be undertaken since this will have a direct impact on perceived safety. In addition, the new generation of Boeing 777 aircraft cannot land here because the current asphalt at the airport cannot support the weight/load of the aircraft given its current landing gear configuration. Any impediment/reason that would deter airlines/charter operations from flying into the airport should be removed.

- There will be an important need for adequate transportation on the island to move ships' crews and temporary workers. While the current taxi fleet may seem adequate for the task, if "home porting" becomes a reality, it will not.

There is a need to establish motor coaches on the island to such an extent that it can help handle the anticipated spike in ships crews/workers and readily move them from the Ship Care Facility to eating/shopping areas and to the airport. It becomes a necessity with 1500 to 2500 passengers coming ashore at once. (In most ports, customers don't want to go ashore after dark, unless there is a formal tour. Motor coaches will be needed to transport them.)

5. *Training* - To fill all available job openings, it is vital to have well-trained Bahamian workers.

- The SCF will accelerate the need for a shore based permanent training facility available to all qualified Bahamians, especially if there is a shortage of Bahamians with the required skills to fill the projected subcontractor/vendor job openings. It is important to expedite such a facility with targeted training programs so subcontractors/vendors can locate on GBI. We must be able to compete by having a prepared workforce. After all, there is no absolute guarantee that these companies will follow Lloyd Werft to GBI.
- There is the potential that the initial training facility associated with the SCF will be expanded to accommodate the ongoing training needs of cruise ships and other



types of vessels to continuously train new crew members and retrain existing employees for certification purposes. If GBI is really going to become a major recruiting and training center for the Caribbean/South Florida region, this needs to happen. The Grand Bahama Port Authority or Government needs to lend whatever assistance necessary to Lloyd Werft or the cruise lines to insure this happens. Again, should this happen, this will have the resulting positive affect on airlift, hotel bookings, real estate and retail.

## *Support Data A*

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### *Methodology*

Throughout the document, terms are used to describe the different effects generated by the SCF. An explanation of these terms may be found in this section.

### *The Multiplier*

Economic activity from a new company will have a ripple effect through the economy of the Bahamas. This new economic activity will take the form of new wages, new employment, new purchases and sales by local businesses and households. The economic activity from this new firm will impact many businesses on Grand Bahama Island from local pubs and restaurants, to taxi cab drivers, to the corner market.

This process is called the *multiplier effect*.

Example:     The additional business created for the bars, restaurants, taxis, grocery stores, gas stations, and related household and business services on the island.

Note:     Multipliers vary according to the technology used, the spending behaviors, wage levels, savings rates, linkages to the rest of the economy, the size of the economy, repatriated income, and the amount of trade external to the economy.

### *Income Multiplier*

Employment multipliers and income multipliers are not linked. They are not measuring the same economic activity. An income multiplier differs from an employment multiplier due to differences in the wages paid for jobs in businesses within the same economic sector, such as manufacturing, or for different jobs within the same business.

Most important to this analysis, the income multiplier is reflecting the lack of necessary inputs to the production process, such as steel, sophisticated electronic components, and pre-fabricated ship parts, that will not be available to be purchased locally by the project. More than anything else, this income multiplier is reflecting how the dependence on imported goods siphons income off-shore in the Bahamian economy. That is one reason this multiplier may appear low.

The more effective local businesses are in capturing the spending dollars available and turning them over locally, and the better the job done in creating new jobs from the opportunities that will be generated, the larger the income multiplier will become.

### *Direct, Indirect, and Induced Effects*

The *direct effect* is the initial change in the economy as a result of the initial direct investment of the project. It is the new jobs created at the company and the income that will be earned by these new workers.

*Indirect effects* include those expenditures and jobs that come from the purchases of goods and services from other local businesses such as welding supplies, industrial supplies, maintenance supplies, office supplies and equipment repair supplies. These purchases will generate new jobs and incomes in these allied industries and businesses.

*Example:* The eventual impact on the air freight business is a good example. Think for a moment of a cardboard box and how many of these will be needed by the additional air freight business. Somebody will need to supply, pack, load, transport, unload and ship these boxes. Potentially, new customs officers will be needed, trucking firms will receive new business and need new drivers, package services and package handling services will get new business and need new employees, and mailing services and packaging services will need to expand to meet the demand for business from the SCF.

*Induced effects* are the additional impacts created by the combination of the direct and indirect jobs and expenditures.

*Example:* New workers (direct or indirect) who have more money spend it at local supermarkets. The store owner will realize an increase in sales revenues which, over time, may in itself create a demand for new employees. The owner's profits increase and he or she, in turn, spends more money in the Commonwealth.

### *Total Effect*

The sum of the direct, indirect, and induced effects is the total effect of the SCF. This process of job creation and income generation continues as long as some portion of spending remains local.

*Example:* How can the eventual total effect from the SCF best be illustrated? Imagine that you have broken the prop on your pleasure boat. Now, you could take the boat down to the local small engine repair shop. You hope that he can weld a new blade on the old prop, or order a new one.

However, his business is very limited since he only repairs engines. Therefore, he has very few products to offer and only a handful of vendors. An increase in his business has a limited effect on the local economy.

Now, suppose you take your boat to a full service marina. This marina not only provides repair services, but also sells fuel, batteries, engine parts, and boat accessories. In addition, it provides a snack bar, book store and speciality retail shop, featuring nautical themed clothing for its customers. Obviously this marina is more than a neighborhood engine repair business.

All these additional services, create a demand for more products and goods from the local economy. As this marina increases it's business, it's total impact on the community and local economy is much greater.

There are more employees, more sales, and more suppliers making more money.

### *Input-Output Table*

An input-output model is the cornerstone to measuring impacts effectively in an economy. It generates numbers that allow us to measure the indirect and induced effects of this facility. The model summarizes the economic relationships between the participants in an economy.

Note: In order to calculate a multiplier for the Bahamas, it was necessary to have a good representation of the economy and good information on the proposed new economic activity. In this case, an approximate input-output model for the economy of the Bahamas was constructed. Information on the proposed SCF was obtained from "The Prospectus for SCF" as well as data from the 1997 Bahamas Statistical Abstract.

With the additional information in an input-output table, it was possible to calculate several important characteristics of the economy relative to the proposed SCF on Grand Bahama Island.

### *Construction of the Bahamas Input-Output Table*

This study involved a great deal of “plowing new ground” in terms of economic impact analysis work. Since no input-output table existed or was readily available for the Bahamas economy, sophisticated methodological techniques were used to construct an input-output table to model the islands’ economy and to measure the impacts of the SCF. For the present study, an approximate input-output table for the Bahamas has been constructed using the compendium of information in the 1997 Statistical Abstracts (Commonwealth of the Bahamas, Department of Statistics, 1997). Since the Abstracts do not include all the necessary data on economic transactions between businesses and households in the Bahamas, this data has been deduced from Aruba, a similarly sized Caribbean Island. The economy of Aruba shares several other important characteristics with the Bahamas; it is relatively prosperous, has an active tourist, re-export, and finance sector, a similar form of government, and similar international trade. Differences between the two countries are Aruba’s large oil refining sector and the Bahamas’ relatively larger fishing and finance sectors. There are also differences in the way that data are compiled and reported. However, these differences were reconciled through statistical techniques developed by the principal investigator for this study.

Note: The number in the tables have been rounded so totals may not always add to 100 percent. However, in the input-output model, figures are calculated to many decimal places.

The formal process of constructing the Bahamas table was to:

- ☐ Re-allocate information in the Aruba input-output table to economic sectors and information used by the Bahamian Authorities. For this, the Supply and Use Tables 1994 presented with the Aruba National Accounts (Central Bureau of Statistics, Aruba, 1996) were consolidated into a single table.
- ☐ Scale the revised Aruba input-output table to match the Bahamian economic structure using information on sector value added, public and household income and expenditures, imports and exports, and balance of payments provided in the 1997 Statistical Abstracts. Data were also adjusted for inflation.
- ☐ Reconcile the income and expenditure accounts for the Bahamas input-output table. The table was adjusted using standard econometric procedures. The final Bahamas input-output accounts are shown in the accompanying Table.
- ☐ Compare the relevant sub-totals with the corresponding item in the Statistical Abstracts. This was done to check the accuracy of the data in the constructed Bahamas input-output table with reported governmental sources of data. The veracity indicators (accuracy measures) show how the sub-totals compare with the statistical data. The data sources used to check the accuracy of the data is appended to this table. For most items the results agree to within a few percent and probably are similar to the statistical uncertainty in the model created, as well as to errors in the reported governmental statistical data. These differences will have little effect on the final calculations (as has been confirmed by varying the data used).





## VERACITY INDICATORS FOR BAHAMAS I-O

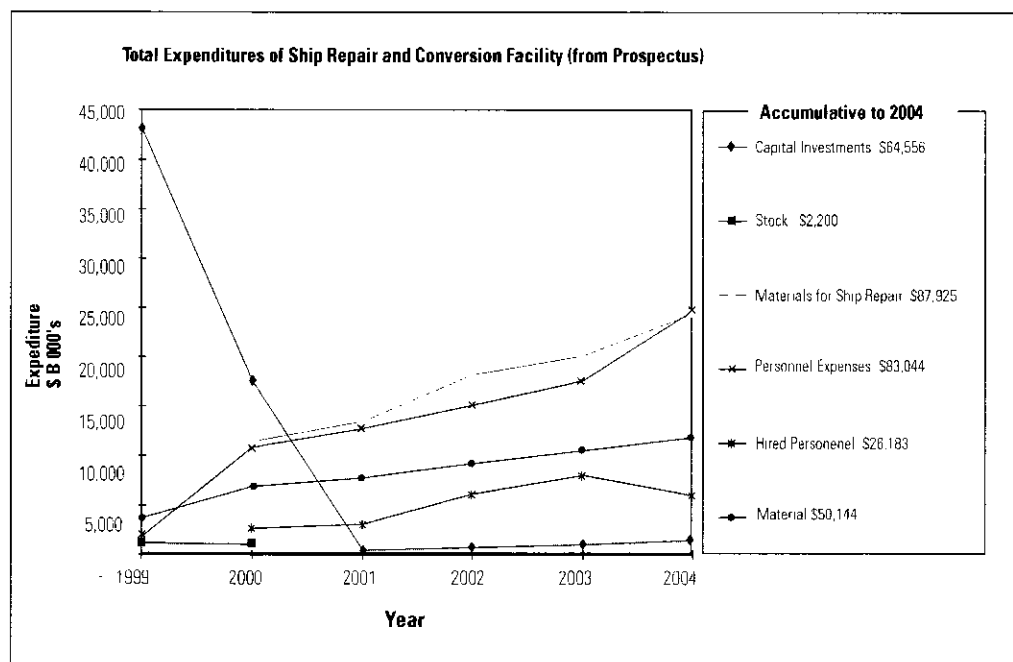
Since the Abstracts do not include all the necessary data on economic transactions between businesses and households in the Bahamas, this data has been deduced from another similarly sized Caribbean Island. This table was constructed to test the validity of the model. There is an average of a 10% variation in the Input (Output) model.

	Expenditures		Income	Exports		Commodity		Bundle		Value Added		Consumption	
	Accounts	Accounts		Statistic	Model	Imports	Statistic	Imports	Model	Statistic	Model	Actual	Model
Agriculture and Fishing	115	119	119	94	25	65	103	5	99				
All Manufacturing	463	471	471	211	165	1157	86	168	66				
Utilities and Mining	333	349	349	0	0	0	138	85	120				
Construction	222	221	221	0	0	21	76	51	62				
Trade	691	705	705	83	176	0	409	143	379				
Hotels and Restaurants	660	659	659	779	623	64	327	122	280				
Transport, Storage, and Communication	542	539	539	181	474	149	309	105	281				
Financial Intermediaries	434	421	421	11	98	97	232	82	236				
Housing	329	345	345	0	0	0	273	22	265				
Other Business Services	161	149	149	242	67	451	82	37	76				
Public Administration and Education	480	504	504	0	0	0	366	57	333				
Health and Other Community and Personal Services	565	568	568	162	150	0	342	103	310				
Compensation of Employees	2647	2495	2495					664				2077	2454
Operating Surplus	1307	1249	1249					316					
Production Taxes	624	625	625					38				609	624
Imports and Expenditures Abroad	1981	1999	1999					0					
<b>Total</b>	<b>11555</b>	<b>11419</b>	<b>11419</b>	<b>1763</b>	<b>1779</b>	<b>0</b>	<b>2742</b>	<b>1999</b>	<b>2507</b>	<b>2742</b>	<b>2507</b>	<b>2687</b>	<b>3078</b>

Note: Model and Actual should be the same. However, only totals should equate for imports.

Imbalances in Export items arise from ambiguities in matching export data to production sectors and require further investigation.

Figure 1



*Explanation of Figure 1:* This chart displays the total anticipated expenditures of the facility over time. The figures to the right of the chart are accumulative to the year 2004. This information is then used in Table 1 to determine specific amounts of local expenditures.

The actual amounts fed into the I-O model for local expenditures are a relatively small share of the total expenditures. We have taken 10% of the totals for equipment and construction, no stock expenditures, 20% of materials expenditures, 100% of the energy expenditures, and 30% of other production costs (excluding personnel). We also have assumed that 90% of personnel salaries and wages will be spent on the island.

These amounts, discounted to 1999 dollars, are shown in Table 1. The overall share of the SCF investments and expenditures spent locally is expected to be approximately 20-30% of the company's projected operating revenues.

Table 1

Local Expenditures		Discounted to 1999 Dollars					
Direct & Indirect)		1999	2000	2001	2002	2003	2004
\$B 000's							
<b>Direct Expenditures</b>							
Personnel/Salaries at the Facility		\$1,650	\$12,170	\$14,321	\$19,239	\$23,245	\$27,680
<b>Indirect Expenditures</b>							
Equipment and Construction		\$4,321	\$1,760	\$50	\$75	\$100	\$150
Stock							
Materials			\$2,346	\$2,723	\$3,650	\$4,050	\$4,897
Utilities			\$837	\$942	\$1,188	\$1,398	\$1,650
Other Production (Excluding Personnel at the Facility)			\$2,513	\$2,990	\$2,672	\$2,296	\$1,953
Dock Charges			\$4,012	\$4,652	\$6,225	\$7,668	\$9,304
<b>Total Indirect Expenditures</b>		<b>\$4,321</b>	<b>\$11,468</b>	<b>\$11,357</b>	<b>\$13,810</b>	<b>\$15,512</b>	<b>\$17,954</b>
<b>Local Purchases/Revenues</b>			<b>28%</b>	<b>24%</b>	<b>22%</b>	<b>20%</b>	<b>19%</b>

\* Company proposes 20 to 30 percent of revenue will be spent on local purchases

Total expenditures from Table 1 have been adjusted to obtain projected local expenditures until 2004. These figures are then used in the I-O model to generate indirect and induced jobs. They are then added to the known direct jobs to provide the *total employment impacts* of the SCF.

The Prospectus identifies the proportion of jobs at the SCF that will be taken by non-Bahamians. The induced jobs created for Bahamians are allocated according to their demographic representation in the population at large, or about 80 percent.

Crew expenditures are estimated from the frequency of use of the facility by type of ship, the size of ship's crew, daily spending levels, and the length of stay in dock. This is summarized in the accompanying Table 2.

Table 2 - Total Number of Induced Jobs from Crew In-Port Expenditures

## CREW IN-PORT EXPENDITURES

## Capacity Planning by Ships Types

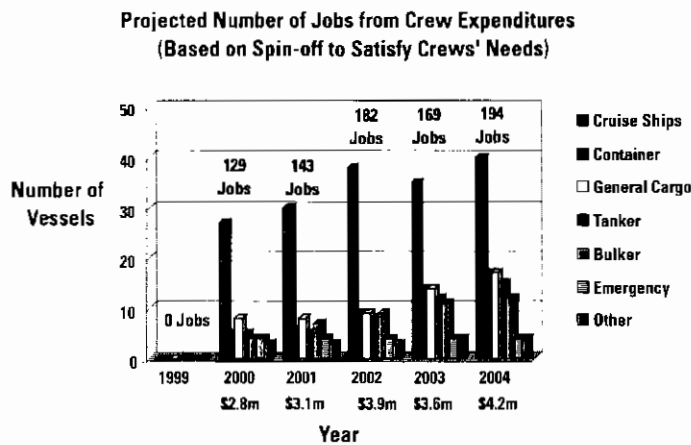
	Hours/Ship	1999	2000	2001	2002	2003	2004
Cruise Ships	10500	27	30	38	35	40	
Container	15000	5	6	9	14	17	
General Cargo	7000	8	8	9	14	17	
Tanker	10000	5	5	8	12	15	
Bulker	5000	4	7	9	11	12	
Emergency	5000	4	4	4	4	4	
Other	3500	3	3	3	4	4	
<b>Total Number of Vessels</b>		<b>56</b>	<b>63</b>	<b>80</b>	<b>94</b>	<b>109</b>	
<b>Total 24hr Days</b>		<b>51</b>	<b>57</b>	<b>72</b>	<b>79</b>	<b>92</b>	
<b>Crew Expenditures(\$B million)</b>		<b>\$2.8</b>	<b>\$3.1</b>	<b>\$3.9</b>	<b>\$3.6</b>	<b>\$4.2</b>	
<b>Number of Induced Jobs</b>		<b>129</b>	<b>143</b>	<b>182</b>	<b>169</b>	<b>194</b>	

Note: Company claims round-the-clock operation

Note: It is assumed for cruise ships that 30% of an 800 man crew will be in port and ashore for 6 days. Crew expenditures per day is approximately \$67. The Table also provides for 200 replacement crew paying \$18.00 in Departure Tax. Income from other vessels based pro-rata on number of hours required for servicing.

Amounts in 1999 prices

Graph of Table 2



### *Explanation of Table 2:*

It demonstrates how induced effects from the SCF will potentially benefit Grand Bahama Island. The table illustrates that not only will the SCF handle cruise ships, but a wide variety of other types of vessels as well.

Modern day cruise ships can have crew numbers approaching 800 to 1,000. Container ships, general cargo, and tanker vessels all have significantly less crew members (modern flagged vessels average 20). The Lloyd Werft business plan

includes the estimated hours each type of vessel will be in the SCF. These hours, multiplied by the estimated volume of ships by type, and then divided by total facility hours available based on projected employment levels, gives the total "24-hour" days the ships will be in the SCF. From this, the estimated impact of crew's stay in port and their estimated spending while on Grand Bahama Island is calculated. It is assumed that crew members will spend an average of \$67.00 per day and that 1/3 of the crew goes on shore daily.

As Table 2 indicates, crew expenditure will grow from \$B 2.8 million in 2000 to \$B 4.2 million in 2004. The majority of crew expenditures will remain on the island because of the large number of recreational activities and establishments on Grand Bahama.

Examples: 7 golf courses; tennis facilities; multi-million dollar sports complex that includes an Olympic approved track and field; rugby clubs; water sports including para-sailing, snorkeling; diving.

The island offers some of the best reefs in the world, deep sea fishing and bone-fishing; gardens and parks; disco-techs; Port Lucaya Marketplace and Marina; International Bazaar, Perfume Factory; 2 casinos; restaurants and the theatre. Keeping money on the island will create jobs and additional spending which will in itself lead to additional jobs. Table 2 indicates that 194 additional jobs could be created in the area by 2004 as a result of ships' crew spending.

Other sources of induced income have been suggested but would require additional research into their specific anticipated expenditure stream (i.e., a study similar to that is required in the Prospectus). It should be noted that some portion of these items (such as a special eating/dining

facility or special medical facility) are already included to some degree in the above calculations.

#### *Explanation of a Seemingly Large Multiplier*

- **First** - The SCF is a significant project for the Bahamas in terms of the size of investment, spending and planned employment.
- **Second** - According to the Prospectus for the SCF, wages for employees will be relatively high compared to other employment on Grand Bahama Island therefore providing more disposable spending for services and businesses on Grand Bahama Island.
- **Third** - Since this project is locating on an island of roughly 45,000 people, the economic impacts from spin-off employment to service the SCF and its employees and sub-contractors will be significant. This is the analogy of the big rock being thrown into the small puddle. This SCF will create a variety of new opportunities for businesses on the island as well as the potential for expansion for existing businesses. However, it must be pointed out that the number of Bahamian jobs created by 2004 as a consequence of the SCF, 1,602 being the number reported in Table 3, constitutes less than 4 percent of the total population of Grand Bahama Island.
- **Fourth** - The SCF will not operate as a stand-alone business. The SCF will require a large supporting cast of sub-contractors and auxiliary support services to carry out its work. Relevant information on the SCF project indicates that anywhere from 20 to 30 sub-contractors could locate to Grand Bahama Island in support of this project. If each of the sub-contractors averaged 20 employees, you could have additional numbers of new indirect employees ranging between 400 to 600. If Bahamians occupied seventy-five percent of the positions in these firms, this would produce 300 to 450 indirect jobs for locals. The major question mark in this process is the role and number of auxiliary services that will be needed to support the SCF. However, air freight services, air passenger services, financial and accounting services, industrial chemicals and solvents, specialty fittings and fastenings, environmental management services, equipment maintenance services, parts supply firms, transportation services, back office operations, office supply and computer services, temporary employment services, food services, and linen services immediately come to mind.

Note: If one considers the direct, indirect, and induced employment that will be generated over time at the SCF, as well as the large numbers of crewmembers, sub-contractors, specialized employees and inspectors that will visit the SCF, then the multipliers generated by this study are well within reason and defensible.

## Support Data B

### Impact of the Ship Care Facility on the Bahamian Economy

Table 4

#### Projected Impact of the SCF

#### Total jobs from the Dry Dock, Induced, and Crew Spending by 2004

SECTOR	Number of Jobs
Agriculture and Fishing	64
All Manufacturing	94
Utilities and Mining	32
Construction	45
Trade	178
Hotels and Restaurants	140
Transport, Storage, and Communication	149
Financial Intermediaries	32
Housing	75
Other Business Services	8
Public Administration and Education	493
Health and Other Community and Personal Services	177
FACILITY	470
Total	1,957

Example of Table 4:

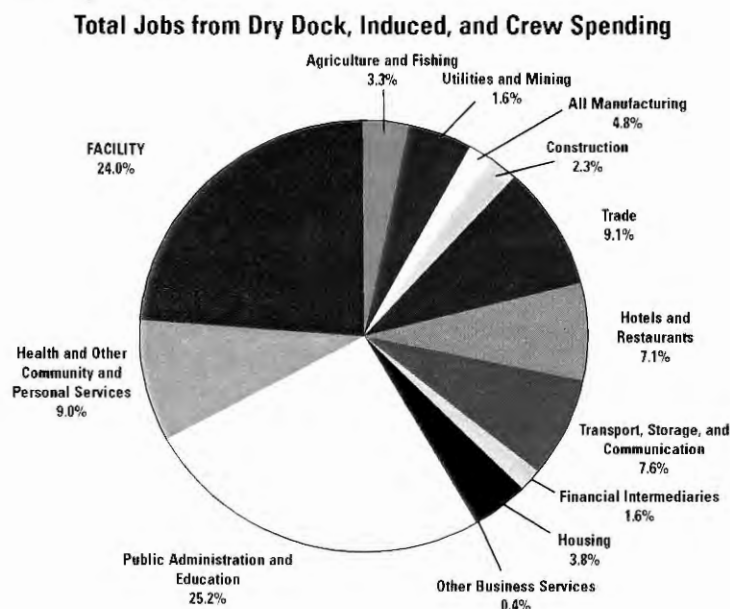
In the year 2004, there will be an additional 64 jobs in the Agriculture and Fishing Sector and 140 hotel and restaurant jobs within the Bahamian Economy.

The SCF, and its major suppliers and support businesses, will be located on Grand Bahama Island.

Therefore, the majority of the jobs created are most likely to be in the Freeport area. The total effects that will occur as a result of this SCF are likely to be felt across the entire country.

Figure 3

Figure 3 Explanation:



The pie chart is derived from the "induced" jobs from Table 4 and is indicative of the Bahamian economy as a whole. Figure 3 indicates the "induced" effects of the SCF locating on Grand Bahama Island. It will create an additional 149 jobs in "Transport, Storage, and Communication". The pie chart percentage is derived by taking the increase in jobs for the "Transport, Storage, and Communications" and dividing by total increase in jobs.



(1.957) and deriving a 7.6 percent share. Because of the induced effects, 7.6 percent of the composition of new jobs will be in the "Transport, Storage, and Communications" sector.

**Note:** The Bahamas input-output table may be improved through the use of more recent data and a more informed allocation of some data. The overall magnitude of the total employment figures are likely to prove robust to such modifications. Although there are rather few clear-cut opportunities to test the specific forecasts of input-output models, experience has shown that impacts calculated in the manner used for the Bahamas table can be quite reliable and the principal investigator in this study has demonstrated that fact through previous research on similar economies.

Estimates of the potential total number of new jobs created should prove reliable, provided the SCF performs as described in its Business Prospectus. The actual number of jobs created for Bahamians will depend on the overall business success of the SCF, the development and success of the proposed job-specific training programs for Bahamians, and the creation of other economic development strategies that will further recycle the income generated by the SCF.

Even though the basis of this report is based on the country as a whole, it is realistic to say that approximately 90% of the effects will be on Grand Bahama Island provided that leakage and adequate infrastructure is in place. In order for Grand Bahama Island to maximize the economic opportunities, the government and the Grand Bahama Port Authority must implement a strategic plan for the island to accommodate the projected growth.

### *Effects from Fees (or taxes)*

#### Facility and Supplier Taxes

Fees Paid to the Bahamian Government		Discounted to 1999				
\$B	1999	2000	2001	2002	2003	2004
Annual Corporate Tax	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000
National Insurance	\$851,136	\$1,284,940	\$1,427,712	\$1,564,991	\$1,709,593	\$2,004,288
Airport Departure Tax		\$75,600	\$84,000	\$106,800	\$98,400	\$111,600
Airport Facility Fees		\$33,000	\$36,500	\$46,000	\$42,500	\$48,000
Net Downstream Facility Induced Taxes	\$434,000	\$2,142,000	\$2,375,000	\$3,124,000	\$3,628,000	\$4,296,000
Customs, Duties on Importation of Vehicles	\$1,932,480	\$1,188,000	\$380,880	\$364,320	\$397,440	\$864,000
Government - Licenses - Restaurants Liquor, Retail/Wholesale	\$100	\$200	\$300	\$400	\$500	\$600
Work Permits (Non-Bahamian)	\$80,000	\$187,500	\$188,500	\$207,500	\$192,500	\$200,500
Annual vehicle Licensing Tax to the Government	\$23,790	\$14,625	\$4,485	\$4,290	\$4,485	\$9,750
<b>Approximate Total Fees</b>	<b>\$3,347,506</b>	<b>\$4,951,865</b>	<b>\$4,523,377</b>	<b>\$5,444,301</b>	<b>\$6,099,418</b>	<b>\$7,560,738</b>

Fees Paid to The Grand Bahama Port Authority		Discounted to 1999				
\$B	1999	2000	2001	2002	2003	2004
License Fees (used average of \$15,000)	\$300,000	\$315,000	\$330,000	\$345,000	\$360,000	\$375,000
Airport Departure Tax		\$38,556	\$42,840	\$54,468	\$50,184	\$56,916
Airport Pre-clearance Fee		\$1,950	\$2,150	\$2,700	\$2,500	\$2,800
Annual Service Charges Paid by Home Owners	\$105,000	\$31,250	\$15,625	\$13,750	\$27,500	\$42,500
<b>Approximate Total Fees</b>	<b>\$405,000</b>	<b>\$386,756</b>	<b>\$369,015</b>	<b>\$415,918</b>	<b>\$440,184</b>	<b>\$477,216</b>

The following tables are an approximation or forecast of the fees (or taxes) paid to the Bahamian Government and The Grand Bahama Port Authority Limited as a result of the SCF locating on Grand Bahama Island. Since we did not have access to certain data or it simply did not exist, the tables are somewhat incomplete. Nevertheless, the table representing fees (or taxes) paid to the

Bahamian government are more or less in line with what one would expect using average Bahamian tax rates (i.e. about 5.5% of national gross sales).

*Notes: The following assumptions and clarifications were used to build the table.*

**Table: Fees Paid to the Bahamian Government**

- Per information from Callenders & Co., the table assumes that Lloyd Werft Grand Bahama Limited is a licensee of the Grand Bahama Port Authority Limited, located in the free trade zone, and will not pay any taxes on its profits, plant, and equipment. This effectively includes fees calculated on gross income, real property taxes, and customs duties.
- This table excludes specific customs duties on the import of consumable goods and items and stamps duties.
- We include annual corporate taxes of \$B1,000 for Lloyd Werft and 25 subcontract/vendor companies.
- We included National Insurance for all Lloyd Werft employees and 10 to 25 subcontractor/vendor companies with 20 to 25 employees each.
- We include a \$B15 airport departure tax based upon 6,300 departures (carrying ship crew members and temporary expatriate workers) in 2000 and increasing to 9,300 departures in 2004.
- We have included taxes on items purchased and consumed by Lloyd Werft employees, subcontractor/vendor employees, and crews for the vessels being repaired from our input-output model. This is included as a calculation in our line item, "net downstream facility induced taxes."
- The customs duties on imported vehicles are included at up to 72% on the importation of up to 315 cars from 1999 to 2004 based upon an average car price of \$B22,000.
- The table excludes 8 percent stamp duty on land transfers in excess of \$B100,000.
- We included government licenses for the operation of any new restaurants, liquor premises, and retailer wholesale establishments as a result of the SCF at \$B100 each.
- We exclude customs and immigration officers overtime charges.
- We include work permit fees for temporary expatriate workers, Lloyd Werft workers, and long-term expatriate workers at the SCF.
- We include vehicle annual licensing fees based upon an average rate of \$B175 and annual inspection taxes of \$B20 per vehicle.

- The table excludes taxes on room rates and maid service charges

**Table: Fees Paid to the Grand Bahama Port Authority Limited**

- This table includes annual license fees of \$B15,000 for 20 companies in 1999 and increasing to 25 companies by 2004 paying an average annual fee of \$B15,000.
- The \$B3 airport departure tax (security fee) was included in this table as was the airport pre-clearance fee of \$B50 per commercial flight.
- The table includes the annual service charges payable by homeowners to the Grand Bahama Port Authority Limited. This is for an estimated 377 new homes over the period, 1999 to 2004 and an average service charge of \$B625.

## Support Data C - Alternative Scenarios

### Alternative Scenarios

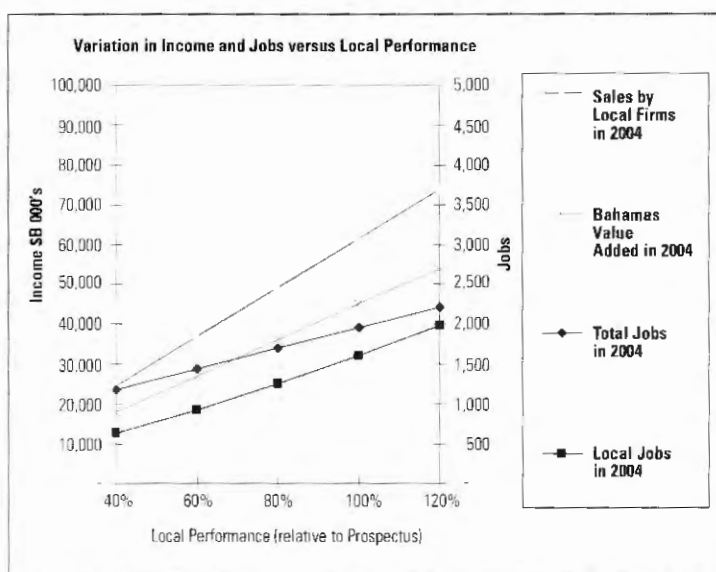
#### Performance Variability and Impact on Employment and Income Multipliers

There is a certain measure of caution in economic analyses. This particular SCF is susceptible to the same larger macro-economic forces as any project, including recession, unfavorable exchange rates, market volatility, shifts in trade policy, and unanticipated mergers and acquisitions in the industry. There are also other important social and economic forces that could dampen the potential of this project including war, weather, labor unrest, changing consumer tastes, political instability in the region, crime, labor shortages, and infrastructure problems. To that end, this report provides a full accounting of the potential influences of these social and economic considerations on the performance of this Facility and on the reported employment and income multipliers found in this analysis.

#### Effect of Variations in the Performance of the SCF on the Number of Local Bahamian Jobs Created

The employment multipliers reported in this analysis are based on information provided in the Lloyd Werft Prospectus. The Prospectus makes assumptions about the likely market for ship repair and conversion services in the Bahamas up to the Year 2004. While such projections are made in good faith, circumstances may dictate that the Facility does not meet its targets, or perhaps even exceeds them. The implications of such eventualities on income and employment in the Bahamas are illustrated in Chart 1.

Chart 1



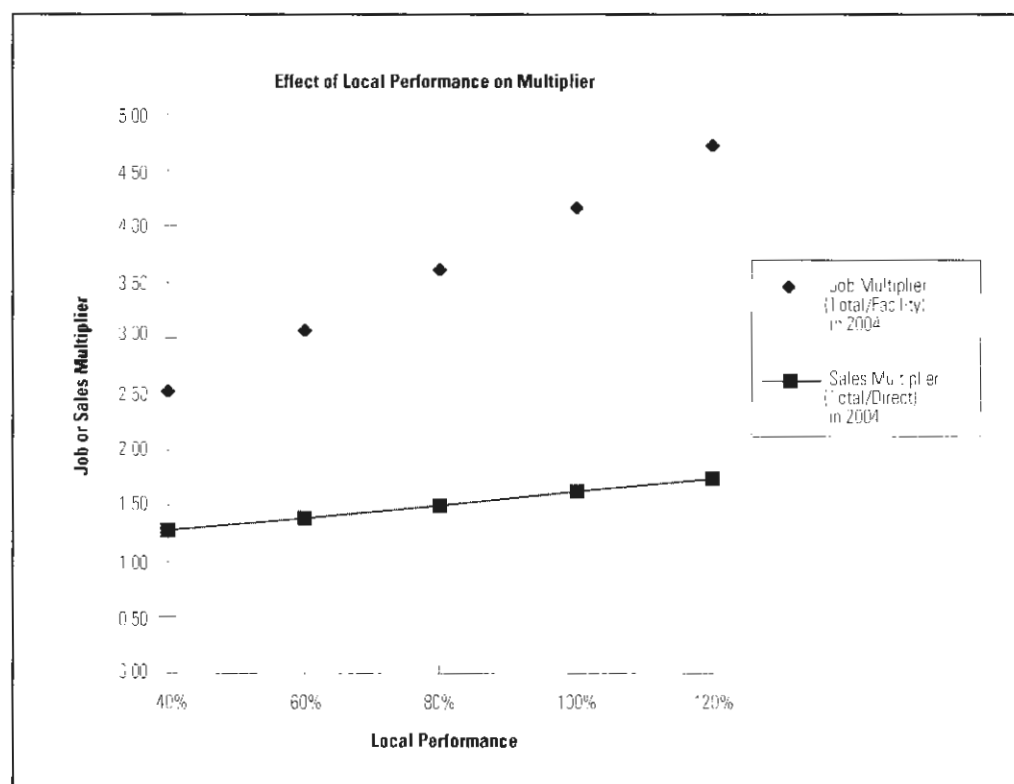
Here it is assumed that the SCF, once constructed, achieves a given level of performance - varying between 40 and 140 percent of its anticipated market and business plan projections. Total and local jobs and local purchases from local suppliers and spending by visiting ship crews are assumed to vary proportionately.

*Example of Chart 1* - This shows that at 40 percent performance level, only about 670 jobs would be provided in total for Bahamians. At the 140 percent level, the number of Bahamian jobs would be more than 2,300. Other items vary in a similar fashion. The calculated income and job multipliers remain constant across the levels of participation.

### The Effect of Variations in the Performance of the Repair and Conversion Facility on Employment and Income Multipliers

Chart 2 shows the effect of variations in performance level on the reported employment and income multipliers. There are a number, and variety, of alternative economic scenarios that can influence the performance level of the SCF and the reported employment and income multipliers.

Chart 2



As seen in Chart 2, the employment and income multipliers, especially at lower levels of performance by the Facility, reduce accordingly. At levels approaching 40 percent of anticipated performance levels, the employment multiplier is around 3.0.

The investigators for this study provide the following items as potential impediments to the planned performance of the SCF:

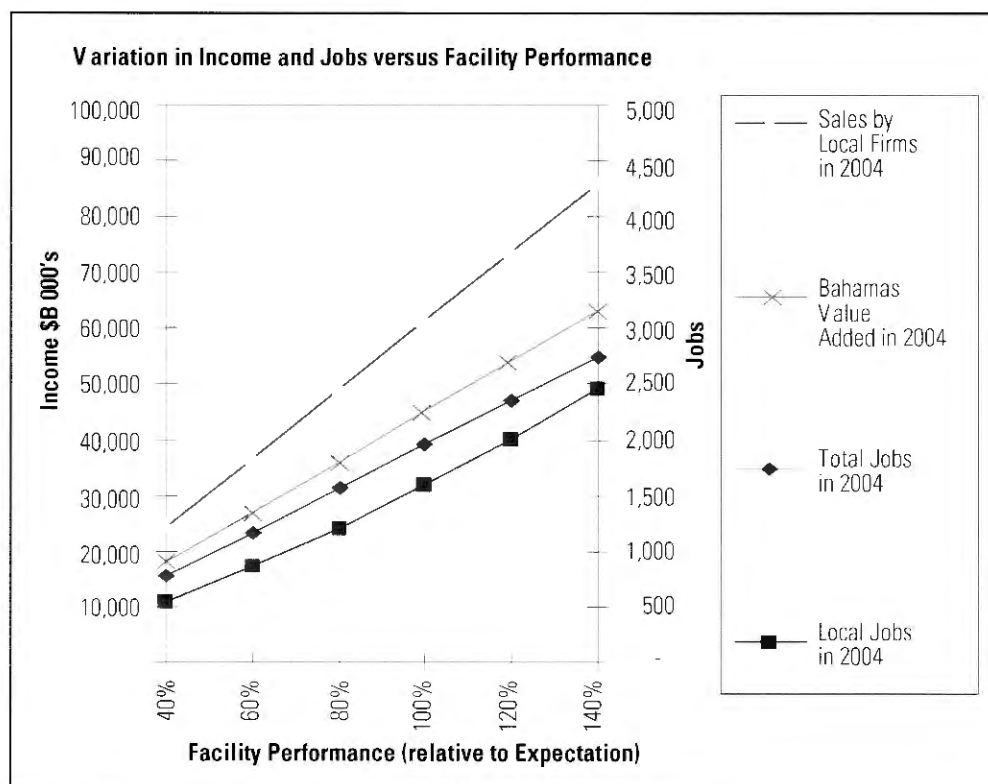
- The number of vendors/subcontractors anticipated by the SCF do not locate to GBI, either in the numbers previously mentioned (20 to 30 companies employing 20 to 30 employees per company) or within the timeframe envisioned. This could significantly impact the employment and income multipliers.

- The close physical proximity of West Palm Beach (56 miles), Fort Lauderdale (69 miles), and Miami (86 miles) to Grand Bahamas Island (GBI) may have a negative impact on the reported multipliers, siphoning off some of the impact of cruise ship vendors/subcontractors who choose to locate to these south Florida cities. Miami is by far the largest cruise ship port in Florida and some of these firms may already have a significant presence there. Economically, it may make sense for them to handle their business out of Miami.
- The Grand Bahama Sea/Air Business Centre, which is an 800 acre industrial park in the Free Trade Zone on GBI, might not be physically ready for prospective clients who want to accompany the SCF to the island.
- There could be a serious shortage of labor on GBI with the necessary degree of education and skill sets required for the SCF.
- There could be large numbers of "contract workers" brought into the SCF due to a local labor shortage.
- An economic recession occurs and the numbers of cruise ships in the Caribbean are reduced. This has a corresponding impact on the number of ships of all types coming into the facility.
- Some other Caribbean country builds its own shipyard.
- The infrastructure on the island is not developed and related development doesn't "multiply" through quite as fast as we would like.
- The SCF misses their booking opportunities for 1999 and the Lloyd Werft order book / operation shifts one year. This means that demand for electricity, water, labor, and induced spending doesn't materialize as planned.
- The cruise ships don't initially start training their crews on Grand Bahama Island, either for re-certification or for training replacement crew members.
- Political or social instability contributes to a less than comfortable business climate for the SCF.

## The Effect of Variations in the Participation Rates of Bahamian Suppliers and Workers to the Repair and Conversion Facility on the Number of Local Bahamian Jobs Created

The last calculation, represented in Chart 3, assumes that Bahamian workers and suppliers participate in the Facility in the proportions assumed in the Prospectus. Whether this happens will depend on the preparedness of both workers and firms to meet the standards set by the Facility.

Chart 3



Thus, even if the Facility performs as expected, the local business community and labor force may not perform as anticipated. In this case, their participation rates may fall below the expected level, or even exceed it. Again, it is simply assumed that the Facility, once constructed, achieves its market goals, but that the level of local participation rates by workers and suppliers varies between 40 and 140 percent of their anticipated share.

Chart 3 shows that a 40 percent performance level, only about 800 jobs would be provided in total for Bahamians. At the 140 percent level, the number of Bahamian jobs would be more than 2,400. The somewhat high levels arise because the level of crew expenditures remains at the level anticipated in the earlier calculation. In this case the calculated income and job multipliers increase with the levels of participation, since a greater share of direct income is spent in the Bahamian economy.

## *Support Data D*

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### *Sources of Information*

1. First Draft of Price Waterhouse Coopers "Economic Impact Study - Drydock" dated March, 1999.
2. Second Draft of Price Waterhouse Coopers "Economic Impact Study - Drydock" dated April, 1999.
3. "Ship Repair and Conversion Facility" (Business Plan) by Lloyd Werft and Grand Bahama Port authority dated February 24, 1999.
4. Draft Copy of Lloyd Werft Grand Bahama Limited Heads of Agreement dated April 6, 1999.
5. Advanced Technology in Ship Repair and Conversion - Lloyd Werft Marketing/Sales brochure.
6. Data from Bahamas Department of Statistics (1997 Bahamas Statistical Abstract).
7. Data from The Central Bank of the Bahamas.
8. 1994 Supply and Use Tables and Aruba National Accounts (Central Bureau of Statistics, Aruba, 1996).
9. 1999 Bahama Handbook and Businessman's Annual, 1998, Eitenne Dupuch Jr. Publications Ltd.
10. The Grand Bahama Island Information Handbook, 1999 Edition
11. DEVCO Sales Limited Information Booklet
12. Conversations with the following:

Mr. David Petersen	Price Waterhouse Coopers
Mr. Werner Lüken	Lloyd Werft Bremerhaven GmbH
Mr. Frederick R.M. Smith	Callenders & Co.
Mr. Colin Wearmouth	The Grand Bahama Port Authority, Limited
Capt. Michael J. O'Brien	Freeport Harbour Company Limited
Ms. Janet Albury	Freeport Harbour Company Ltd.
Mr. R. Larry Brantley	Freeport Power Company Ltd.
Mr. Michael Moss	Freeport Power Company Ltd.
Mr. Dennis Garcia	G.B. Utility Company
Mr. John Murphy	The Grand Bahama Airport Co. Ltd.
Mr. Alton E. Jones	DEVCO Sales
Mr. Graham R. Torode	Hutchinson Lucaya Limited
Mr. David Duncan	Freeport Harbour Company Ltd.
Mr. David Johnson	Grand Bahama Tourist Board



## *Support Data E*

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### *Biographical Sketches on the Southern Company Team (Alphabetical)*

Economic modeling experts from the University of Georgia and the State University of New York at Buffalo are a part of the Southern Company support team. They were brought into the process to develop and analyze an Input-Output table to establish the multipliers from the proposed SCF. Additional members of the team provide a vast range of experience in industrial development, economic development, recruitment and related fields such as community development, business development, and strategic planning. A brief biographical sketch follows on each:

*Tom Allen* is the Director of Economic Development in the International Business Division for Southern Energy, Inc., a Southern Company. He is responsible for promoting inward investment, business expansion and developing growth initiatives in concert with Southern Company's international subsidiaries, with a focus on Grand Bahama Island, Southwest England, Brazil, Trinidad and Tobago, Berlin, and the Philippines. He also provides strategic marketing support to all business development teams in the international markets.

Prior to joining SEI as Director of Economic Development, Tom held several positions with Georgia Power. He was the Manager of Economic Development for the Metro Atlanta Region, Regional Manager of Economic Development for Georgia Power's Coastal Region and Senior Project Manager for Economic Development on a statewide basis.

His economic development experience involves coastal, rural and urban initiatives, inward investment recruiting, marketing and community economic development planning and strategies. Examples of his rural economic development activities include a strategic planning initiative for Coastal Georgia that encompassed 34 different counties that produced a Leadership Institute for Economic Development in Georgia. Tom also led a team of economic development professionals responsible for the organization of private sector input for European Union "Objective One" Funding (£ 500 million) for Cornwall, a county in South West England. He was instrumental in developing the "vision" for Cornwall, which resulted in a comprehensive strategic business plan for key sectors within the county. His urban experience includes Atlanta's Empowerment Zone application and implementation and the Atlanta Regional Commission Vision 20/20 planning effort.

Mr. Allen is a graduate of Georgia Institute of Technology with a Bachelor's Degree in Industrial Management.

*Rusty Brooks* is the co-developer of an Input-Output Economic Assessment Model (I-O/EAM) developed to estimate the economic impact of changes in community and county economies in Georgia. Examples of modeling include:

- Socio-economic assessment of a business location decision by Continental Grain Corporation to site a multi-million dollar poultry processing and feed processing facility in a rural county in Georgia
- Impacts of the closure of a of business in an urban county in Georgia
- Conducted socio-economic impact assessments of expansions and specific project developments of sectors of the tourism industry on coastal communities in North Carolina, Georgia, and Florida
- Conducted studies on the community and regional impacts of the closure of textile mill facilities in Georgia
- Consulted with Argonne National Laboratory on the impacts of the development of the Tennessee-Tombigbee Waterway in Mississippi and Alabama
- Provided consultation to the United States Department of Agriculture on the community, regional and state-wide impacts of changes in the peanut program and its potential for disruptions to the economies of Georgia and Alabama
- Provided socio-economic impact analysis to the Southern Growth Policies Board, the Southern Legislative Caucus and the states of South Dakota, Texas and Oregon

Rusty is currently an Associate Professor at the University of Georgia. His appointment is in the J.W. Fanning Institute for Leadership and Community Development where he works primarily on community economic development, socio-economic forecasting, action planning, and heritage and cultural tourism.

In addition to the State of Georgia, he has provided consultation on community and economic development planning to organizations in Texas, Oregon, North Carolina, South Carolina, Mississippi, Tennessee, Florida, Pennsylvania, Washington, and Alabama, Australia, Mexico, Chile, Croatia, Austria, Italy, Slovenia, South Africa, Zimbabwe and Canada.

His work on community indicators led to the development of a successful and innovative data analysis and planning model entitled Socio-economic Perspectives. He has also worked in socio-economic forecasting and socio-economic trend analysis for the Bureau of Economic Analysis, the Southern Rural Development Center and the Southern Growth Policies Board.

Rusty is a graduate of the University of Georgia with a Ph.D. in community development. He is also a graduate of the University of Alabama with a BA and MS in Political Science.

*Sam Cole's* expertise is in socio-economic planning, regional and island development, global modeling and social and technological forecasting. Examples of previous work include:

- Prepared the first "Medium Term Economic Development Plan" for the country of Aruba prior to its independence
- The Impact of the Niagara Mohawk Corporation on the Economy of New York
- Cost-Benefit Study of Water Tank Back-up Facilities in Aruba
- The Impact of the Shutdown of the Ravenscraig Steelworks on the Lanarkshire Region of Scotland

- Construction of Model to Assess Sustainable Development for the Yellow River Delta
- Decision Support for Calamity Preparedness - The Socio-Economic and Inter-Regional Impacts of an Earthquake on Electricity Lifelines in Memphis, Tennessee
- Niagara Hydro-Power Project Relicensing Socio-economic Study

Dr. Cole is a Professor in the Department of Planning at the State University of New York at Buffalo. He is the Director of Research at the Center for Development Analysis, the State University of New York at Buffalo.

Prior to his positions with the State University of New York at Buffalo, Dr. Cole was at the Science Policy Research Unit at the University of Sussex, the United Kingdom Department of Environment and the Cavendish Laboratory, Cambridge. He is a member of the National Centre for Geographic Information and Analysis and the National Center for Earthquake Engineering Research.

Dr. Cole has been a consultant to several international agencies including the European Commission, the United Nations Fund for Population Activities, the UNDP African National Long Term Perspectives Studies Project, the UN Commission on Culture and Development and prepared an Economic Development Plan for the Caribbean island of Aruba. He is presently working with the Sustainable Development for the Yellow River Delta Project.

He has authored and edited several books on global models and futures scenarios including, "Models of Doom: A Critique of the Limits to Growth," "World Futures - The Great Debate," "Worlds Apart: Technology, Distribution and the International Economy," "The Global Impact of Information Technology" and "Global Models and Futures Studies."

Dr. Cole is a graduate of the University of Sussex with a Ph.D. in Physics. He is also a graduate of the Imperial College, London with a BS, ARCS in theoretical physics.

*Danielle Quan-Hill* is an Economic Development Associate in the International Business Division for Southern Energy, Inc. Danielle is responsible for marketing and promoting inward investment for Southern Company's assets in concert with Southern Company's international subsidiaries, with a focus on Grand Bahama Island, Southwest England, Brazil, Trinidad and Tobago, Berlin, and the Philippines. Danielle played a significant role in the organization of a private sector initiative to obtain Objective One Funding (£ 500 million) for Cornwall, a county in South West England. Prior to joining SEI, Danielle worked for the Georgia Power Company where she spent time in Community Development, Governmental Resources, Customer Operations, Marketing Regulatory Affairs and Resource Policy and Planning. She provided expertise in developing collateral materials, marketing, research and analysis.

Danielle is a graduate of Georgia Institute of Technology with a Master of Science Degree in City Planning. She is also a graduate of Florida State University with a BS in Social Science and Sociology.

Tom Suitt is an Economic Development Specialist Officer in the International Business Division for Southern Energy, Inc. Tom is responsible for the Department's International Recruitment Program where he works in concert with Southern Company's international subsidiaries, with a focus on Grand Bahama Island, Southwest England, Brazil, Trinidad and Tobago, Berlin, and the Philippines.

Tom has broad-based experience ranging from business development, industrial construction, and commercial banking. Prior to joining Southern Energy, Inc., Tom held various positions within the private sector. He was a Regional Vice President of the Industrial Division for Bovis Construction Corporation (a P&O Company) and Vice Chairman of Suitt Construction Corporation, Inc. a \$340 million, privately held industrial contractor. During his 15-year tenure at Suitt, he helped deliver over 5,136,000 square feet of industrial work (25 projects) representing owner's investment of over \$1.1 billion dollars. As Suitt Vice Chairman, he actively served on the Board of Directors and was involved in all strategic planning. His managerial responsibilities included 7 years as Vice President and Atlanta Division Manager, various project management assignments, sales and Corporate Treasurer.

Over the last 10 years, Tom has been involved with the Georgia Economic Developers Association, Georgia Chamber of Commerce and the Industrial Development Research Council (IDRC). Prior to joining Suitt Construction, he was a commercial banker in New York City with Manufacturers Hanover Trust and the Bank of New York. During his tenure with the Bank of New York, he helped finance the development of the Boeing Aircraft 767 and 757 family of jets, finance 747 and C-130 aircraft for TransAmerica Airways, and finance multiple equipment purchases for GATX Leasing.

Tom is a 1976 MBA graduate from the Babcock School of Management at Wake Forest University, Winston Salem, NC. He received his BS Degree in Business Administration from the Citadel, Charleston, SC in 1974.